SEQUENCE LISTING

<110> Tohyama, Masaya
        Yamashita Toshihide
        Tanaka, Hiroyuki
        Higuchi, Haruhisa

<120> COMPOSITION AND METHOD FOR NERVE REGENERATION

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<140> US 10/551,157
<141> 2004-03-26

<150> PCT/JP2004/004385
<151> 2004-03-26

<150> JP 2003-092923
<151> 2003-03-28

<150> JP 2003-125681
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2

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<212>   PRT
<213>   Homo sapiens

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Pro Thr Gly Leu Tyr Thr His Ser Gly Glu Cys Cys Lys Ala Cys Asn
            35                  40                  45
Leu Gly Glu Gly Val Ala Gln Pro Cys Gly Ala Asn Gln Thr Val Cys
        50                  55                  60
Glu Pro Cys Leu Asp Ser Val Thr Phe Ser Asp Val Val Ser Ala Thr
65                  70                  75                  80
Glu Pro Cys Lys Pro Cys Thr Glu Cys Val Gly Leu Gln Ser Met Ser
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Ala Pro Cys Val Glu Ala Asp Asp Ala Val Cys Arg Cys Ala Tyr Gly
            100                 105                 110
Tyr Tyr Gln Asp Glu Thr Thr Gly Arg Cys Glu Ala Cys Arg Val Cys
        115                 120                 125
Glu Ala Gly Ser Gly Leu Val Phe Ser Cys Gln Asp Lys Gln Asn Thr
        130                 135                 140
Val Cys Glu Glu Cys Pro Asp Gly Thr Tyr Ser Asp Glu Ala Asn His
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Val Asp Pro Cys Leu Pro Cys Thr Val Cys Glu Asp Thr Glu Arg Gln
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3

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Pro Val Val Thr Arg Gly Thr Thr Asp Asn Leu Ile Pro Val Tyr Cys
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Ser Ile Leu Ala Ala Val Val Val Gly Leu Val Ala Tyr Ile Ala Phe
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Lys Arg Trp Asn Ser Cys Lys Gln Asn Lys Gln Gly Ala Asn Ser Arg
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Pro Val Asn Gln Thr Pro Pro Pro Glu Gly Glu Lys Leu His Ser Asp
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Ser Gly Ile Ser Val Asp Ser Gln Ser Leu His Asp Gln Gln Pro His
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Ser Ser Leu Pro Pro Ala Lys Arg Glu Glu Val Glu Lys Leu Leu Asn
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Gly Ser Ala Gly Asp Thr Trp Arg His Leu Ala Gly Glu Leu Gly Tyr
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Gln Pro Glu His Ile Asp Ser Phe Thr His Glu Ala Cys Pro Val Arg
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Ala Leu Leu Ala Ser Trp Ala Thr Gln Asp Ser Ala Thr Leu Asp Ala
385                     390                 395                 400
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4

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Lys Ser Ile Gln Glu Ile Gln Glu Leu Asp Lys Asp Asp Glu Ser Leu
        35                  40                  45
Arg Lys Tyr Lys Glu Ala Leu Leu Gly Arg Val Ala Val Ser Ala Asp
    50                  55                  60
Pro Asn Val Pro Asn Val Val Val Thr Gly Leu Thr Leu Val Cys Ser
65                  70                  75                  80
Ser Ala Pro Gly Pro Leu Glu Leu Asp Leu Thr Gly Asp Leu Glu Ser
                85                  90                  95
Phe Lys Lys Gln Ser Phe Val Leu Lys Glu Gly Val Glu Tyr Arg Ile
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Lys Ile Ser Phe Arg Val Asn Arg Glu Ile Val Ser Gly Met Lys Tyr
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Ile Gln His Thr Tyr Arg Lys Gly Val Lys Ile Asp Lys Thr Asp Tyr
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Met Val Gly Ser Tyr Gly Pro Arg Ala Glu Glu Tyr Glu Phe Leu Thr
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Pro Val Glu Glu Ala Pro Lys Gly Met Leu Ala Arg Gly Ser Tyr Ser
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Ile Lys Ser Arg Phe Thr Asp Asp Asp Lys Thr Asp His Leu Ser Trp
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Glu Trp Asn Leu Thr Ile Lys Lys Asp Trp Lys Asp
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<212>   DNA
<213>   Rattus norvegicus


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<212>   PRT
<213>   Rattus norvegicus

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Phe Glu Gly Thr Cys Val Ser Ile Pro Cys Arg Phe Asp Phe Pro Asp
            35                  40                  45
Glu Leu Arg Pro Ala Val Val His Gly Val Trp Tyr Phe Asn Ser Pro
        50                  55                  60
Tyr Pro Lys Asn Tyr Pro Pro Val Val Phe Lys Ser Arg Thr Gln Val
65                  70                  75                  80
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6

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Gly Lys Tyr Tyr Phe Arg Gly Asp Leu Gly Gly Tyr Asn Gln Tyr Thr
            115                     120                     125
Phe Ser Glu His Ser Val Leu Asp Ile Ile Asn Thr Pro Asn Ile Val
        130                     135                     140
Val Pro Pro Glu Val Val Ala Gly Thr Glu Val Glu Val Ser Cys Met
145                     150                     155                     160
Val Pro Asp Asn Cys Pro Glu Leu Arg Pro Glu Leu Ser Trp Leu Gly
                165                     170                     175
His Glu Gly Leu Gly Glu Pro Thr Val Leu Gly Arg Leu Arg Glu Asp
            180                     185                     190
Glu Gly Thr Trp Val Gln Val Ser Leu Leu His Phe Val Pro Thr Arg
            195                     200                     205
Glu Ala Asn Gly His Arg Leu Gly Cys Gln Ala Ala Phe Pro Asn Thr
        210                     215                     220
Thr Leu Gln Phe Glu Gly Tyr Ala Ser Leu Asp Val Lys Tyr Pro Pro
225                     230                     235                     240
Val Ile Val Glu Met Asn Ser Ser Val Glu Ala Ile Glu Gly Ser His
                245                     250                     255
Val Ser Leu Leu Cys Gly Ala Asp Ser Asn Pro Pro Pro Leu Leu Thr
            260                     265                     270
Trp Met Arg Asp Gly Met Val Leu Arg Glu Ala Val Ala Glu Ser Leu
            275                     280                     285
Tyr Leu Asp Leu Glu Glu Val Thr Pro Ala Glu Asp Gly Ile Tyr Ala
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Cys Leu Ala Glu Asn Ala Tyr Gly Gln Asp Asn Arg Thr Val Glu Leu
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Ala Val Glu Gly Glu Thr Val Ser Ile Leu Cys Ser Thr Gln Ser Asn
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Pro Asp Pro Ile Leu Thr Ile Phe Lys Glu Lys Gln Ile Leu Ala Thr
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Val Ile Tyr Glu Ser Gln Leu Gln Leu Glu Leu Pro Ala Val Thr Pro
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Glu Asp Asp Gly Glu Tyr Trp Cys Val Ala Glu Asn Gln Tyr Gly Gln
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Arg Ala Thr Ala Phe Asn Leu Ser Val Glu Phe Ala Pro Ile Ile Leu
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Leu Glu Ser His Cys Ala Ala Ala Arg Asp Thr Val Gln Cys Leu Cys
            420                     425                     430
Val Val Lys Ser Asn Pro Glu Pro Ser Val Ala Phe Glu Leu Pro Ser
            435                     440                     445
Arg Asn Val Thr Val Asn Glu Thr Glu Arg Glu Phe Val Tyr Ser Glu
        450                     455                     460
Arg Ser Gly Leu Leu Leu Thr Ser Ile Leu Thr Leu Arg Gly Gln Ala
465                     470                     475                     480
Gln Ala Pro Pro Arg Val Ile Cys Thr Ser Arg Asn Leu Tyr Gly Thr
                485                     490                     495
Gln Ser Leu Glu Leu Pro Phe Gln Gly Ala His Arg Leu Met Trp Ala
            500                     505                     510
Lys Ile Gly Pro Val Gly Ala Val Val Ala Phe Ala Ile Leu Ile Ala
            515                     520                     525
Ile Val Cys Tyr Ile Thr Gln Thr Arg Arg Lys Lys Asn Val Thr Glu
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7

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Glu Phe Arg Ile Ser Gly Ala Pro Asp Lys Tyr Glu Ser Glu Lys Arg
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Leu Gly Ser Glu Arg Arg Leu Leu Gly Leu Arg Gly Glu Pro Pro Glu
                  580                   585                   590
Leu Asp Leu Ser Tyr Ser His Ser Asp Leu Gly Lys Arg Pro Thr Lys
              595                   600                   605
Asp Ser Tyr Thr Leu Thr Glu Glu Leu Ala Glu Tyr Ala Glu Ile Arg
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Val Lys
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23

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24

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25

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<212>   PRT
<213>   Mus musculus

<400>   10

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        35                  40                  45
Asp Leu Glu Glu Leu Glu Val Leu Glu Arg Lys Pro Ala Ala Gly Leu
    50                  55                  60
Ser Ala Ala Pro Val Pro Pro Ala Ala Ala Pro Leu Leu Asp Phe Ser
65                  70                  75                  80
Ser Asp Ser Val Pro Pro Ala Pro Arg Gly Pro Leu Pro Ala Ala Pro
                85                  90                  95
Pro Thr Ala Pro Glu Arg Gln Pro Ser Trp Glu Arg Ser Pro Ala Ala
            100                 105                 110
Ser Ala Pro Ser Leu Pro Pro Ala Ala Ala Val Leu Pro Ser Lys Leu
        115                 120                 125
Pro Glu Asp Asp Glu Pro Pro Ala Arg Pro Pro Ala Pro Ala Gly Ala
    130                 135                 140
Ser Pro Leu Ala Glu Pro Ala Ala Pro Pro Ser Thr Pro Ala Ala Pro
145                 150                 155                 160
Lys Arg Arg Gly Ser Gly Ser Val Asp Glu Thr Leu Phe Ala Leu Pro
                165                 170                 175
Ala Ala Ser Glu Pro Val Ile Pro Ser Ser Ala Glu Lys Ile Met Asp
            180                 185                 190
Leu Lys Glu Gln Pro Gly Asn Thr Val Ser Ser Gly Gln Glu Asp Phe
        195                 200                 205
Pro Ser Val Leu Phe Glu Thr Ala Ala Ser Leu Pro Ser Leu Ser Pro
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Leu Ser Thr Val Ser Phe Lys Glu His Gly Tyr Leu Gly Asn Leu Ser
225                 230                 235                 240
Ala Val Ala Ser Thr Glu Gly Thr Ile Glu Glu Thr Leu Asn Glu Ala
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Ser Arg Glu Leu Pro Glu Arg Ala Thr Asn Pro Phe Val Asn Arg Glu
            260                 265                 270
Ser Ala Glu Phe Ser Val Leu Glu Tyr Ser Glu Met Gly Ser Ser Phe
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Asn Gly Ser Pro Lys Gly Glu Ser Ala Met Leu Val Glu Asn Thr Lys
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Glu Glu Val Ile Val Arg Ser Lys Asp Lys Glu Asp Leu Val Cys Ser
305                 310                 315                 320
Ala Ala Leu His Asn Pro Gln Glu Ser Pro Ala Thr Leu Thr Lys Val
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Val Lys Glu Asp Gly Val Met Ser Pro Glu Lys Thr Met Asp Ile Phe
            340                 345                 350
Asn Glu Met Lys Met Ser Val Val Ala Pro Val Arg Glu Glu Tyr Ala
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Asp Ser Glu Ser Arg Asn Glu Asn Ala Ser Phe Pro Arg Thr Pro Glu
                420                      425                      430
Leu Val Lys Asp Gly Ser Arg Ala Tyr Ile Thr Cys Asp Ser Phe Ser
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Ser Ala Thr Glu Ser Thr Ala Ala Asn Ile Phe Pro Val Leu Glu Asp
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His Thr Ser Glu Asn Lys Thr Asp Glu Lys Lys Ile Glu Glu Arg Lys
465                      470                      475                      480
Ala Gln Ile Ile Thr Glu Lys Thr Ser Pro Lys Thr Ser Asn Pro Phe
                485                      490                      495
Leu Val Ala Ile His Asp Ser Glu Ala Asp Tyr Val Thr Thr Asp Asn
                500                      505                      510
Leu Ser Lys Val Thr Glu Ala Val Val Ala Thr Met Pro Glu Gly Leu
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Thr Pro Asp Leu Val Gln Glu Ala Cys Glu Ser Glu Leu Asn Glu Ala
    530                      535                      540
Thr Gly Thr Lys Ile Ala Tyr Glu Thr Lys Val Asp Leu Val Gln Thr
545                      550                      555                      560
Ser Glu Ala Ile Gln Glu Ser Ile Tyr Pro Thr Ala Gln Leu Cys Pro
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Ser Phe Glu Glu Ala Glu Ala Thr Pro Ser Pro Val Leu Pro Asp Ile
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Val Met Glu Ala Pro Leu Asn Ser Leu Leu Pro Ser Thr Gly Ala Ser
                595                      600                      605
Val Ala Gln Pro Ser Ala Ser Pro Leu Glu Val Pro Ser Pro Val Ser
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Tyr Asp Gly Ile Lys Leu Glu Pro Glu Asn Pro Pro Pro Tyr Glu Glu
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Glu Pro Glu Ser Phe Asn Ala Ala Ala Gln Glu Ala Glu Ala Pro Tyr
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Ile Ser Ile Ala Cys Asp Leu Ile Lys Glu Thr Lys Leu Ser Thr Glu
                675                      680                      685
Pro Ser Pro Glu Phe Ser Asn Tyr Ser Glu Ile Ala Lys Phe Glu Lys
    690                      695                      700
Ser Val Pro Asp His Cys Glu Leu Val Asp Asp Ser Ser Pro Glu Ser
705                      710                      715                      720
Glu Pro Val Asp Leu Phe Ser Asp Asp Ser Ile Pro Glu Val Pro Gln
                725                      730                      735
Thr Gln Glu Glu Ala Val Met Leu Met Lys Glu Ser Leu Thr Glu Val
                740                      745                      750
Ser Glu Thr Val Thr Gln His Lys His Lys Glu Arg Leu Ser Ala Ser
                755                      760                      765
Pro Gln Glu Val Gly Lys Pro Tyr Leu Glu Ser Phe Gln Pro Asn Leu
    770                      775                      780
His Ile Thr Lys Asp Ala Ala Ser Asn Glu Ile Pro Thr Leu Thr Lys
785                      790                      795                      800
Lys Glu Thr Ile Ser Leu Gln Met Glu Glu Phe Asn Thr Ala Ile Tyr
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Thr Phe Val Ser Ala Lys Asp Asp Ser Pro Lys Glu Tyr Thr Asp Leu
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Glu Val Ser Asn Lys Ser Glu Ile Ala Asn Val Gln Ser Gly Ala Asn
865                 870                 875                 880
Ser Leu Pro Cys Ser Glu Leu Pro Cys Asp Leu Ser Phe Lys Asn Thr
             885             890                 895
Tyr Pro Lys Asp Glu Ala His Val Ser Asp Glu Phe Ser Lys Ser Arg
         900                 905                 910
Ser Ser Val Ser Lys Val Pro Leu Leu Leu Pro Asn Val Ser Ala Leu
         915                 920                 925
Glu Ser Gln Ile Glu Met Gly Asn Ile Val Lys Pro Lys Val Leu Thr
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Lys Glu Ala Glu Glu Lys Leu Pro Ser Asp Thr Glu Lys Glu Asp Arg
945                 950                 955                 960
Ser Leu Thr Ala Val Leu Ser Ala Glu Leu Asn Lys Thr Ser Val Val
             965                 970                 975
Asp Leu Leu Tyr Trp Arg Asp Ile Lys Lys Thr Gly Val Val Phe Gly
             980                 985                 990
Ala Ser Leu Phe Leu Leu Leu Ser  Leu Thr Val Phe Ser  Ile Val Ser
         995             1000                 1005
Val Thr  Ala Tyr Ile Ala Leu  Ala Leu Leu Ser Val  Thr Ile Ser
     1010             1015             1020
Phe Arg  Ile Tyr Lys Gly Val  Ile Gln Ala Ile Gln  Lys Ser Asp
     1025             1030             1035
Glu Gly  His Pro Phe Arg Ala  Tyr Leu Glu Ser Glu  Val Ala Ile
     1040             1045             1050
Ser Glu  Glu Leu Val Gln Lys  Tyr Ser Asn Ser Ala  Leu Gly His
     1055             1060             1065
Val Asn  Ser Thr Ile Lys Glu  Leu Arg Arg Leu Phe  Leu Val Asp
     1070             1075             1080
Asp Leu  Val Asp Ser Leu Lys  Phe Ala Val Leu Met  Trp Val Phe
     1085             1090             1095
Thr Tyr  Val Gly Ala Leu Phe  Asn Gly Leu Thr Leu  Leu Ile Leu
     1100             1105             1110
Ala Leu  Ile Ser Leu Phe Ser  Ile Pro Val Ile Tyr  Glu Arg His
     1115             1120             1125
Gln Ala  Gln Ile Asp His Tyr  Leu Gly Leu Ala Asn  Lys Ser Val
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Lys Asp  Ala Met Ala Lys Ile  Gln Ala Lys Ile Pro  Gly Leu Lys
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            35                  40                  45
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        50                  55                  60
Asp Tyr Asp Arg Leu Arg Pro Leu Ser Tyr Pro Asp Thr Asp Val Ile
65                  70                  75                  80
Leu Met Cys Phe Ser Ile Asp Ser Pro Asp Ser Leu Glu Asn Ile Pro
                85                  90                  95
Glu Lys Trp Thr Pro Glu Val Lys His Phe Cys Pro Asn Val Pro Ile
                100                 105                 110
Ile Leu Val Gly Asn Lys Lys Asp Leu Arg Asn Asp Glu His Thr Arg
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Arg Glu Leu Ala Lys Met Lys Gln Glu Pro Val Lys Pro Glu Glu Gly
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Arg Asp Met Ala Asn Arg Ile Gly Ala Phe Gly Tyr Met Glu Cys Ser
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<212> DNA
<213> Mus musculus

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agaggccacc atttgaggat ggcctttaca gagaacattc agcccttcc ccaccaccaa        540
gccattccat aggcgtggga cctcgtgggg ctcagaggaa cagttgatcc aggcattttt      600
ctctgcagtg accgaaatgc ccaggatagt gtggtgattg gcagtagagc tctaagaagg      660
gagccgggct gaagagatgg ctcagcactt actcttgctg agggcctgag ttcgattccc      720
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tgagccacat gtcccttaga ctctgggga tgatgtcctt cccccttggca tctggcctga    900
catctgttct ctctccacag atttctatca ctccaagcgc agattggtct tctgcaagag    960
aaaaccctga agtgcccacg ggagccccgc cctcttctgc tgtgggtcag gaggcctctt   1020
ccccatcttc ggccttagcc ctcactctgt gtgtcttaat tattatttgt gttttaattt   1080
aaacgtctcc tgatatacgc tgcctgccct ctcccagtct ccaaacttaa agttatttaa   1140
aaaaa                                                                1145


<210>   14
<211>   159
<212>   PRT
<213>   Mus musculus

<400>   14
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1               5                   10                  15
Cys Arg Cys Leu Phe Gly Pro Val Asp Ser Glu Gln Leu Arg Arg Asp
            20                  25                  30
Cys Asp Ala Leu Met Ala Gly Cys Leu Gln Glu Ala Arg Glu Arg Trp
            35                  40                  45
Asn Phe Asp Phe Val Thr Glu Thr Pro Leu Glu Gly Asn Phe Val Trp
        50                  55                  60
Glu Arg Val Arg Ser Leu Gly Leu Pro Lys Val Tyr Leu Ser Pro Gly
65                  70                  75                  80
Ser Arg Ser Arg Asp Asp Leu Gly Gly Asp Lys Arg Pro Ser Thr Ser
                85                  90                  95
Ser Ala Leu Leu Gln Gly Pro Ala Pro Glu Asp His Val Ala Leu Ser
            100                 105                 110
Leu Ser Cys Thr Leu Val Ser Glu Arg Pro Glu Asp Ser Pro Gly Gly
            115                 120                 125
Pro Gly Thr Ser Gln Gly Arg Lys Arg Arg Gln Thr Ser Leu Thr Asp
        130                 135                 140
Phe Tyr His Ser Lys Arg Arg Leu Val Phe Cys Lys Arg Lys Pro
145                 150                 155

<210>   15
<211>   10
<212>   PRT
<213>   Artificial

<220>
<223>   Artificial Sequence

<400>   15
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1               5                   10

<210>   16

<211>   3259
<212>   DNA
<213>   Rattus norvegicus

<400>   16
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ggtctgcgga gcggactgag ctagaagcgg agcgctgacg ccggaggcgt gcaatgagga   120
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gggcaggtgc tgcctgcagc gccatggacc ggctgcgcct gctgctgctg ctgattctag      180
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agtgctgcaa agcctgcaac ttgggcgaag gcgtggccca gccctgcgga gccaaccaga      300
ccgtgtgtga accctgcctg dacaatgtta cattctccga tgtggtgagc gccactgagc      360
cgtgcaagcc gtgcaccgag tgcctgggcc tgcagagcat gtccgctccc tgtgtggagg      420
cagacgatgc agtgtgcaga tgtgcctatg gctactacca ggacgaggag actggccact      480
gtgaggcttg cagcgtgtgc gaggtgggct cgggactcgt gttctcctgc caggacaaac      540
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acccgtgcct accctgcacg gtgtgcgagg acactgagcg ccagttacgc gagtgcacgc      660
cctgggctga tgctgaatgc gaagagatcc ctggtcgatg gatcccaagg tctacgcccc      720
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aacaaggcgc caacagccgc cccgtgaacc agacgccccc accggaggga gagaaactgc     1020
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agactgcctc aggccaggcc ctcaagggtg atggcaacct ctacagtagc ctgccctga     1140
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cctatctgag ctgaaagcag gtttggaacc cagcccacac ttctctctca cacacaggat     1920
ggtaaaaccc agagaaaggc agggactgac ctaggccacc caaccacagg aagaacaaat     1980
gaaggctgat acactccgtt tctgaatgag ggcgtcaagt gtgcttgttg acagggatgg     2040
cgtgactttc agggaaatat ctggaagcca tgtctgcccc gccctcaacc acttccaggc     2100
ccctacccaa cccttgtgca gatgaactgt ttgttcaagg gctggtccat tggtctattc     2160
tgatggagtc aagctaaggg ctcaggctta tccataaggc atttgtggag agatgaatct     2220
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tgactgcatc tgagctggtg tctgtcttcc aatggcctgt gcgtggagga aatgctccca     2580
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cgcgggtggt attttatgg accccaatct gcaattccca gacacctggg aagtgggaca     3000
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tctggccctc cagctggtga ctatgaactc cagacccctt cgtgctcccc gacgccttcc     3180
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<210>   17
<211>   425
<212>   PRT
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                                     31
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<213> Rattus norvegicus

<400> 17

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            20                  25                  30
Cys Ser Thr Gly Leu Tyr Thr His Ser Gly Glu Cys Cys Lys Ala Cys
        35                  40                  45
Asn Leu Gly Glu Gly Val Ala Gln Pro Cys Gly Ala Asn Gln Thr Val
    50                  55                  60
Cys Glu Pro Cys Leu Asp Asn Val Thr Phe Ser Asp Val Val Ser Ala
65                  70                  75                  80
Thr Glu Pro Cys Lys Pro Cys Thr Glu Cys Leu Gly Leu Gln Ser Met
                85                  90                  95
Ser Ala Pro Cys Val Glu Ala Asp Asp Ala Val Cys Arg Cys Ala Tyr
            100                 105                 110
Gly Tyr Tyr Gln Asp Glu Glu Thr Gly His Cys Glu Ala Cys Ser Val
            115                 120                 125
Cys Glu Val Gly Ser Gly Leu Val Phe Ser Cys Gln Asp Lys Gln Asn
    130                 135                 140
Thr Val Cys Glu Glu Cys Pro Glu Gly Thr Tyr Ser Asp Glu Ala Asn
145                 150                 155                 160
His Val Asp Pro Cys Leu Pro Cys Thr Val Cys Glu Asp Thr Glu Arg
                165                 170                 175
Gln Leu Arg Glu Cys Thr Pro Trp Ala Asp Ala Glu Cys Glu Glu Ile
            180                 185                 190
Pro Gly Arg Trp Ile Pro Arg Ser Thr Pro Pro Glu Gly Ser Asp Ser
            195                 200                 205
Thr Ala Pro Ser Thr Gln Glu Pro Glu Val Pro Pro Glu Gln Asp Leu
    210                 215                 220
Val Pro Ser Thr Val Ala Asp Met Val Thr Thr Val Met Gly Ser Ser
225                 230                 235                 240
Gln Pro Val Val Thr Arg Gly Thr Thr Asp Asn Leu Ile Pro Val Tyr
                245                 250                 255
Cys Ser Ile Leu Ala Ala Val Val Val Gly Leu Val Ala Tyr Ile Ala
            260                 265                 270
Phe Lys Arg Trp Asn Ser Cys Lys Gln Asn Lys Gln Gly Ala Asn Ser
    275                 280                 285
Arg Pro Val Asn Gln Thr Pro Pro Pro Glu Gly Glu Lys Leu His Ser
    290                 295                 300
Asp Ser Gly Ile Ser Val Asp Ser Gln Ser Leu His Asp Gln Gln Thr
305                 310                 315                 320
His Thr Gln Thr Ala Ser Gly Gln Ala Leu Lys Gly Asp Gly Asn Leu
                325                 330                 335
Tyr Ser Ser Leu Pro Leu Thr Lys Arg Glu Glu Val Glu Lys Leu Leu
            340                 345                 350
Asn Gly Asp Thr Trp Arg His Leu Ala Gly Glu Leu Gly Tyr Gln Pro
            355                 360                 365
Glu His Ile Asp Ser Phe Thr His Glu Ala Cys Pro Val Arg Ala Leu
    370                 375                 380
Leu Ala Ser Trp Gly Ala Gln Asp Ser Ala Thr Leu Asp Ala Leu Leu
385                 390                 395                 400
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Ser Glu Ser Thr Ala Thr Ser Pro Val
            420                 425
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32

<210> 18
<211> 4167
<212> DNA
<213> Homo sapiens

<400> 18
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gaaacaggca tggtacattg tgatacagca gttggaacac cggattatat atcacctgag     780
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aaggagaata gaaagctaca tatggagctt aaatctgaac gtgagaaatt gacccagcag    3240
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<210>    19
<211>    1388
<212>    PRT
<213>    Homo sapiens


<400>    19
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                20                  25                  30
Leu Ile Arg Asp Pro Arg Ser Pro Ile Asn Val Glu Ser Leu Leu Asp
            35                  40                  45
Gly Leu Asn Ser Leu Val Leu Asp Leu Asp Phe Pro Ala Leu Arg Lys
        50                  55                  60
Asn Lys Asn Ile Asp Asn Phe Leu Asn Arg Tyr Glu Lys Ile Val Lys
65                  70                  75                  80
Lys Ile Lys Gly Leu Gln Met Lys Ala Glu Asp Tyr Asp Val Val Lys
                85                  90                  95
Val Ile Gly Arg Gly Ala Phe Gly Glu Val Gln Leu Val Arg His Lys
                100                 105                 110
Ala Ser Gln Lys Val Tyr Ala Met Lys Leu Leu Ser Lys Phe Glu Met
            115                 120                 125
Ile Lys Arg Ser Asp Ser Ala Phe Phe Trp Glu Glu Arg Asp Ile Met
        130                 135                 140
Ala Phe Ala Asn Ser Pro Trp Val Val Gln Leu Phe Tyr Ala Phe Gln
145                 150                 155                 160
Asp Asp Arg Tyr Leu Tyr Met Val Met Glu Tyr Met Pro Gly Gly Asp
                165                 170                 175
Leu Val Asn Leu Met Ser Asn Tyr Asp Val Pro Glu Lys Trp Ala Lys
            180                 185                 190
Phe Tyr Thr Ala Glu Val Val Leu Ala Leu Asp Ala Ile His Ser Met
            195                 200                 205
Gly Leu Ile His Arg Asp Val Lys Pro Asp Asn Met Leu Leu Asp Lys
        210                 215                 220
His Gly His Leu Lys Leu Ala Asp Phe Gly Thr Cys Met Lys Met Asp
225                 230                 235                 240
```

```
Glu Thr Gly Met Val His Cys Asp Thr Ala Val Gly Thr Pro Asp Tyr
            245                 250                 255
Ile Ser Pro Glu Val Leu Lys Ser Gln Gly Gly Asp Gly Phe Tyr Gly
            260                 265                 270
Arg Glu Cys Asp Trp Trp Ser Val Gly Val Phe Leu Tyr Glu Met Leu
            275                 280                 285
Val Gly Asp Thr Pro Phe Tyr Ala Asp Ser Leu Val Gly Thr Tyr Ser
            290                 295                 300
Lys Ile Met Asp His Lys Asn Ser Leu Cys Phe Pro Glu Asp Ala Glu
305                 310                 315                 320
Ile Ser Lys His Ala Lys Asn Leu Ile Cys Ala Phe Leu Thr Asp Arg
                    325                 330                 335
Glu Val Arg Leu Gly Arg Asn Gly Val Glu Glu Ile Arg Gln His Pro
            340                 345                 350
Phe Phe Lys Asn Asp Gln Trp His Trp Asp Asn Ile Arg Glu Thr Ala
            355                 360                 365
Ala Pro Val Val Pro Glu Leu Ser Ser Asp Ile Asp Ser Ser Asn Phe
            370                 375                 380
Asp Asp Ile Glu Asp Asp Lys Gly Asp Val Glu Thr Phe Pro Ile Pro
385                 390                 395                 400
Lys Ala Phe Val Gly Asn Gln Leu Pro Phe Ile Gly Phe Thr Tyr Tyr
                    405                 410                 415
Arg Glu Asn Leu Leu Leu Ser Asp Ser Pro Ser Cys Arg Glu Asn Asp
                    420                 425                 430
Ser Ile Gln Ser Arg Lys Asn Glu Glu Ser Gln Glu Ile Gln Lys Lys
            435                 440                 445
Leu Tyr Thr Leu Glu Glu His Leu Ser Asn Glu Met Gln Ala Lys Glu
            450                 455                 460
Glu Leu Glu Gln Lys Cys Lys Ser Val Asn Thr Arg Leu Glu Lys Thr
465                 470                 475                 480
Ala Lys Glu Leu Glu Glu Glu Ile Thr Leu Arg Lys Ser Val Glu Ser
                    485                 490                 495
Ala Leu Arg Gln Leu Glu Arg Glu Lys Ala Leu Leu Gln His Lys Asn
            500                 505                 510
Ala Glu Tyr Gln Arg Lys Ala Asp His Glu Ala Asp Lys Lys Arg Asn
            515                 520                 525
Leu Glu Asn Asp Val Asn Ser Leu Lys Asp Gln Leu Glu Asp Leu Lys
            530                 535                 540
Lys Arg Asn Gln Asn Ser Gln Ile Ser Thr Glu Lys Val Asn Gln Leu
545                 550                 555                 560
Gln Arg Gln Leu Asp Glu Thr Asn Ala Leu Leu Arg Thr Glu Ser Asp
                    565                 570                 575
Thr Ala Ala Arg Leu Arg Lys Thr Gln Ala Glu Ser Ser Lys Gln Ile
                    580                 585                 590
Gln Gln Leu Glu Ser Asn Asn Arg Asp Leu Gln Asp Lys Asn Cys Leu
            595                 600                 605
Leu Glu Thr Ala Lys Leu Lys Leu Glu Lys Glu Phe Ile Asn Leu Gln
            610                 615                 620
Ser Ala Leu Glu Ser Glu Arg Arg Asp Arg Thr His Gly Ser Glu Ile
625                 630                 635                 640
Ile Asn Asp Leu Gln Gly Arg Ile Cys Gly Leu Glu Glu Asp Leu Lys
                    645                 650                 655
Asn Gly Lys Ile Leu Leu Ala Lys Val Glu Leu Glu Lys Arg Gln Leu
                    660                 665                 670
Gln Glu Arg Phe Thr Asp Leu Glu Lys Glu Lys Ser Asn Met Glu Ile
            675                 680                 685
Asp Met Thr Tyr Gln Leu Lys Val Ile Gln Gln Ser Leu Glu Gln Glu
```

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            690                     695                     700
Glu Ala Glu His Lys Ala Thr Lys Ala Arg Leu Ala Asp Lys Asn Lys
705                     710                     715                     720
Ile Tyr Glu Ser Ile Glu Glu Ala Lys Ser Glu Ala Met Lys Glu Met
                725                     730                     735
Glu Lys Lys Leu Leu Glu Glu Arg Thr Leu Lys Gln Lys Val Glu Asn
                740                     745                     750
Leu Leu Leu Glu Ala Glu Lys Arg Cys Ser Leu Leu Asp Cys Asp Leu
            755                     760                     765
Lys Gln Ser Gln Gln Lys Ile Asn Glu Leu Leu Lys Gln Lys Asp Val
            770                     775                     780
Leu Asn Glu Asp Val Arg Asn Leu Thr Leu Lys Ile Glu Gln Glu Thr
785                     790                     795                     800
Gln Lys Arg Cys Leu Thr Gln Asn Asp Leu Lys Met Gln Thr Gln Gln
                805                     810                     815
Val Asn Thr Leu Lys Met Ser Glu Lys Gln Leu Lys Gln Glu Asn Asn
                820                     825                     830
His Leu Met Glu Met Lys Met Asn Leu Glu Lys Gln Asn Ala Glu Leu
            835                     840                     845
Arg Lys Glu Arg Gln Asp Ala Asp Gly Gln Met Lys Glu Leu Gln Asp
    850                     855                     860
Gln Leu Glu Ala Glu Gln Tyr Phe Ser Thr Leu Tyr Lys Thr Gln Val
865                     870                     875                     880
Arg Glu Leu Lys Glu Glu Cys Glu Glu Lys Thr Lys Leu Gly Lys Glu
                885                     890                     895
Leu Gln Gln Lys Lys Gln Glu Leu Gln Asp Glu Arg Asp Ser Leu Ala
                900                     905                     910
Ala Gln Leu Glu Ile Thr Leu Thr Lys Ala Asp Ser Glu Gln Leu Ala
            915                     920                     925
Arg Ser Ile Ala Glu Glu Gln Tyr Ser Asp Leu Glu Lys Glu Lys Ile
    930                     935                     940
Met Lys Glu Leu Glu Ile Lys Glu Met Met Ala Arg His Lys Gln Glu
945                     950                     955                     960
Leu Thr Glu Lys Asp Ala Thr Ile Ala Ser Leu Glu Glu Thr Asn Arg
                965                     970                     975
Thr Leu Thr Ser Asp Val Ala Asn Leu Ala Asn Glu Lys Glu Glu Leu
            980                     985                     990
Asn Asn Lys Leu Lys Asp Val Gln  Glu Gln Leu Ser Arg  Leu Lys Asp
            995                     1000                    1005
Glu Glu  Ile Ser Ala Ala Ala  Ile Lys Ala Gln Phe  Glu Lys Gln
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Leu Leu  Thr Glu Arg Thr Leu  Lys Thr Gln Ala Val  Asn Lys Leu
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Ala Glu  Ile Met Asn Arg Lys  Glu Pro Val Lys Arg  Gly Asn Asp
    1040                    1045                    1050
Thr Asp  Val Arg Arg Lys Glu  Lys Glu Asn Arg Lys  Leu His Met
    1055                    1060                    1065
Glu Leu  Lys Ser Glu Arg Glu  Lys Leu Thr Gln Gln  Met Ile Lys
    1070                    1075                    1080
Tyr Gln  Lys Glu Leu Asn Glu  Met Gln Ala Gln Ile  Ala Glu Glu
    1085                    1090                    1095
Ser Gln  Ile Arg Ile Glu Leu  Gln Met Thr Leu Asp  Ser Lys Asp
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Ser Asp  Ile Glu Gln Leu Arg  Ser Gln Leu Gln Ala  Leu His Ile
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Gly Leu  Asp Ser Ser Ser Ile  Gly Ser Gly Pro Gly  Asp Ala Glu
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Ala Asp  Asp Gly Phe Pro Glu  Ser Arg Leu Glu Gly  Trp Leu Ser
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Leu Pro  Val Arg Asn Asn Thr  Lys Lys Phe Gly Trp  Val Lys Lys
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Tyr Val  Ile Val Ser Ser Lys  Lys Ile Leu Phe Tyr  Asp Ser Glu
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Gln Asp  Lys Glu Gln Ser Asn  Pro Tyr Met Val Leu  Asp Ile Asp
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Lys Leu  Phe His Val Arg Pro  Val Thr Gln Thr Asp  Val Tyr Arg
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Ala Asp  Ala Lys Glu Ile Pro  Arg Ile Phe Gln Ile  Leu Tyr Ala
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Asn Glu  Gly Glu Ser Lys Lys  Glu Gln Glu Phe Pro  Val Glu Pro
    1235             1240             1245
Val Gly  Glu Lys Ser Asn Tyr  Ile Cys His Lys Gly  His Glu Phe
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Ile Pro  Thr Leu Tyr His Phe  Pro Thr Asn Cys Glu  Ala Cys Met
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Lys Pro  Leu Trp His Met Phe  Lys Pro Pro Pro Ala  Leu Glu Cys
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Arg Arg  Cys His Ile Lys Cys  His Lys Asp His Met  Asp Lys Lys
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Glu Glu  Ile Ile Ala Pro Cys  Lys Val Tyr Tyr Asp  Ile Ser Thr
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Ala Lys  Asn Leu Leu Leu Leu  Ala Asn Ser Thr Glu  Glu Gln Gln
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Lys Trp  Val Ser Arg Leu Val  Lys Lys Ile Pro Lys  Lys Pro Pro
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Ala Pro  Asp Pro Phe Ala Arg  Ser Ser Pro Arg Thr  Ser Met Lys
    1355             1360             1365
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Pro Asn  Lys Pro Ser
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<213>   Human adenovirus type 1

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<213>   Human adenovirus type 1

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aataaatgta agaaaaggga acagcaagca gcagctgaca caggaaacag cagccaggtc    420
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<211> 495
<212> DNA
<213> Homo sapiens

<400> 22
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ggtgacttcg cctgggagcg tgtgcggggc cttggcctgc ccaagctcta ccttcccacg   240
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39
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<211>   164
<212>   PRT
<213>   Homo sapiens

<400>   23
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            20                  25                  30
Asp Cys Asp Ala Leu Met Ala Gly Cys Ile Gln Glu Ala Arg Glu Arg
        35                  40                  45
Trp Asn Phe Asp Phe Val Thr Glu Thr Pro Leu Glu Gly Asp Phe Ala
    50                  55                  60
Trp Glu Arg Val Arg Gly Leu Gly Leu Pro Lys Leu Tyr Leu Pro Thr
65                  70                  75                  80
Gly Pro Arg Arg Gly Arg Asp Glu Leu Gly Gly Gly Arg Arg Pro Gly
            85                  90                  95
Thr Ser Pro Ala Leu Leu Gln Gly Thr Ala Glu Glu Asp His Val Asp
            100                 105                 110
Leu Ser Leu Ser Cys Thr Leu Val Pro Arg Ser Gly Glu Gln Ala Glu
            115                 120                 125
Gly Ser Pro Gly Gly Pro Gly Asp Ser Gln Gly Arg Lys Arg Arg Gln
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Lys Arg Lys Pro
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<210>   24
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<212>   PRT
<213>   Artificial Sequence

<220>
<223>   substrate

<400>   24
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<211>   72
<212>   PRT
<213>   Human adenovirus type 1

<400>   25
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            20                  25                  30
His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
        35                  40                  45
Arg Lys Lys Arg Arg Gln Arg Arg Arg Ala Pro Gln Asp Ser Gln Thr
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<210>   26
<211>   3305
<212>   DNA
<213>   Rattus norvegicus


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<210>   27
<211>   672
<212>   PRT
<213>   Rattus norvegicus

<400>   27
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Glu Val Lys Asp His Lys Phe Ile Ala Arg Phe Phe Lys Gln Pro Thr
        35                  40                  45
Phe Cys Ser His Cys Thr Asp Phe Ile Trp Gly Phe Gly Lys Gln Gly
    50                  55                  60
Phe Gln Cys Gln Val Cys Cys Phe Val Val His Lys Arg Cys His Glu
65                  70                  75                  80
Phe Val Thr Phe Ser Cys Pro Gly Ala Asp Lys Gly Pro Asp Thr Asp
                85                  90                  95
Asp Pro Arg Ser Lys His Lys Phe Lys Ile His Thr Tyr Gly Ser Pro
            100                 105                 110
Thr Phe Cys Asp His Cys Gly Ser Leu Leu Tyr Gly Leu Ile His Gln
        115                 120                 125
Gly Met Lys Cys Asp Thr Cys Asp Met Asn Val His Lys Gln Cys Val
    130                 135                 140
Ile Asn Val Pro Ser Leu Cys Gly Met Asp His Thr Glu Lys Arg Gly
145                 150                 155                 160
Arg Ile Tyr Leu Lys Ala Glu Val Thr Asp Glu Lys Leu His Val Thr
                165                 170                 175
Val Arg Asp Ala Lys Asn Leu Ile Pro Met Asp Pro Asn Gly Leu Ser
            180                 185                 190
Asp Pro Tyr Val Lys Leu Lys Leu Ile Pro Asp Pro Lys Asn Glu Ser
            195                 200                 205
Lys Gln Lys Thr Lys Thr Ile Arg Ser Thr Leu Asn Pro Gln Trp Asn
    210                 215                 220
Glu Ser Phe Thr Phe Lys Leu Lys Pro Ser Asp Lys Asp Arg Arg Leu
225                 230                 235                 240
Ser Val Glu Ile Trp Asp Trp Asp Arg Thr Thr Arg Asn Asp Phe Met
                245                 250                 255
Gly Ser Leu Ser Phe Gly Val Ser Glu Leu Met Lys Met Pro Ala Ser
            260                 265                 270
Gly Trp Tyr Lys Leu Leu Asn Gln Glu Glu Gly Glu Tyr Tyr Asn Val
            275                 280                 285
Pro Ile Pro Glu Gly Asp Glu Glu Gly Asn Val Glu Leu Arg Gln Lys
        290                 295                 300
Phe Glu Lys Ala Lys Leu Gly Pro Ala Gly Asn Lys Val Ile Ser Pro
305                 310                 315                 320
Ser Glu Asp Arg Lys Gln Pro Ser Asn Asn Leu Asp Arg Val Lys Leu
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                   325                   330                   335
Thr Asp Phe Asn Phe Leu Met Val Leu Gly Lys Gly Ser Phe Gly Lys
            340                   345                   350
Val Met Leu Ala Asp Arg Lys Gly Thr Glu Glu Leu Tyr Ala Ile Lys
        355                   360                   365
Ile Leu Lys Lys Asp Val Val Ile Gln Asp Asp Asp Val Glu Cys Thr
    370                   375                   380
Met Val Glu Lys Arg Val Leu Ala Leu Leu Asp Lys Pro Pro Phe Leu
385                   390                   395                   400
Thr Gln Leu His Ser Cys Phe Gln Thr Val Asp Arg Leu Tyr Phe Val
                405                   410                   415
Met Glu Tyr Val Asn Gly Gly Asp Leu Met Tyr His Ile Gln Gln Val
            420                   425                   430
Gly Lys Phe Lys Glu Pro Gln Ala Val Phe Tyr Ala Ala Glu Ile Ser
        435                   440                   445
Ile Gly Leu Phe Phe Leu His Lys Arg Gly Ile Ile Tyr Arg Asp Leu
    450                   455                   460
Lys Leu Asp Asn Val Met Leu Asp Ser Glu Gly His Ile Lys Ile Ala
465                   470                   475                   480
Asp Phe Gly Met Cys Lys Glu His Met Met Asp Gly Val Thr Thr Arg
            485       .             490                   495
Thr Phe Cys Gly Thr Pro Asp Tyr Ile Ala Pro Glu Ile Ile Ala Tyr
        500                   505                   510
Gln Pro Tyr Gly Lys Ser Val Asp Trp Trp Ala Tyr Gly Val Leu Leu
        515                   520                   525
Tyr Glu Met Leu Ala Gly Gln Pro Pro Phe Asp Gly Glu Asp Glu Asp
        530                   535           .       540
Glu Leu Phe Gln Ser Ile Met Glu His Asn Val Ser Tyr Pro Lys Ser
545                   550                   555                   560
Leu Ser Lys Glu Ala Val Ser Ile Cys Lys Gly Leu Met Thr Lys His
            565                   570                   575
Pro Ala Lys Arg Leu Gly Cys Gly Pro Glu Gly Glu Arg Asp Val Arg
        580                   585   .               590
Glu His Ala Phe Phe Arg Arg Ile Asp Trp Glu Lys Leu Glu Asn Arg
        595                   600                   605
Glu Ile Gln Pro Pro Phe Lys Pro Lys Val Cys Gly Lys Gly Ala Glu
    610                   615                   620
Asn Phe Asp Lys Phe Phe Thr Arg Gly Gln Pro Val Leu Thr Pro Pro
625                   630                   635                   640
Asp Gln Leu Val Ile Ala Asn Ile Asp Gln Ser Asp Phe Glu Gly Phe
            645                   650                   655
Ser Tyr Val Asn Pro Gln Phe Val His Pro Ile Leu Gln Ser Ala Val
        660                   665                   670
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